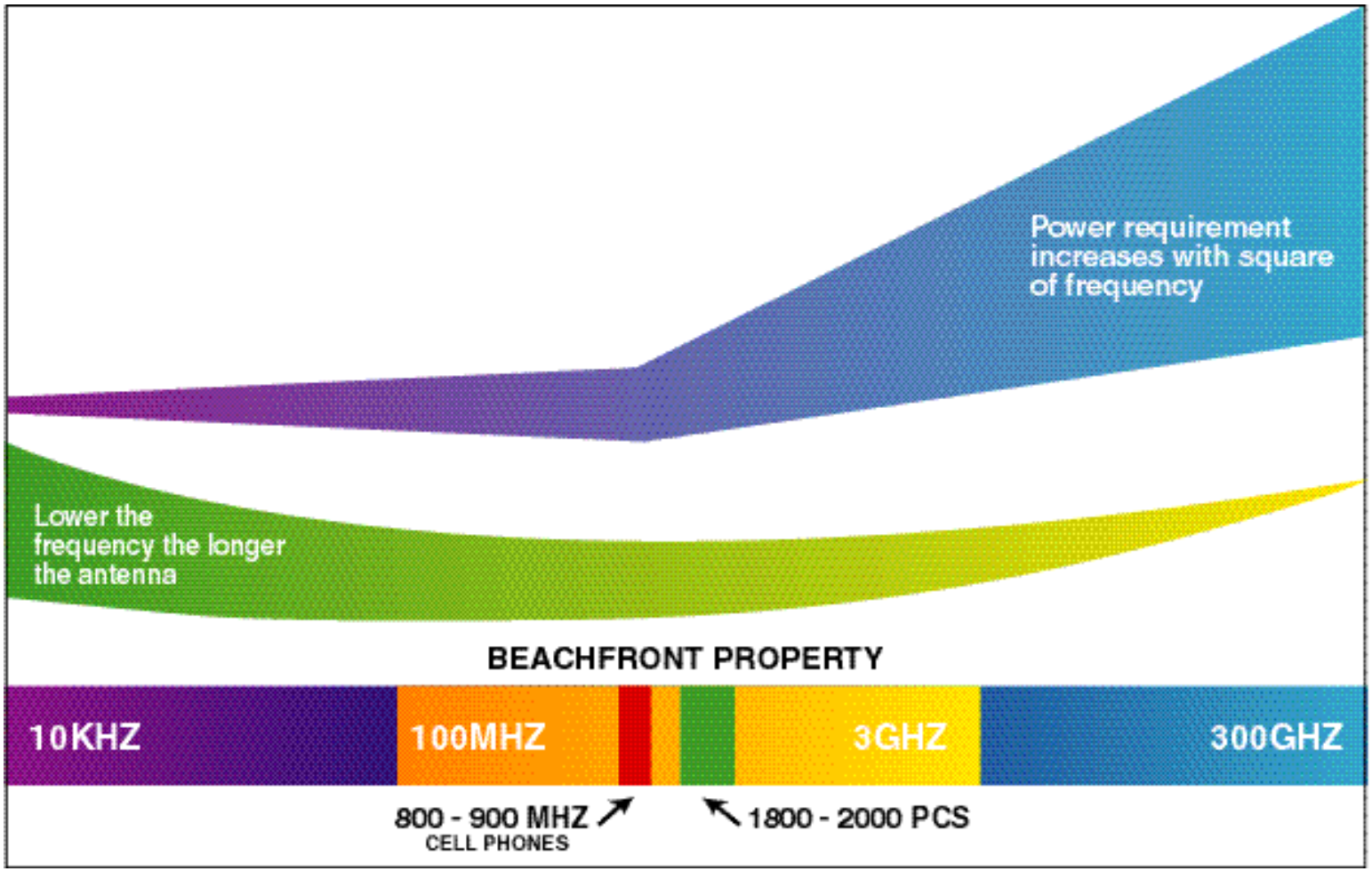
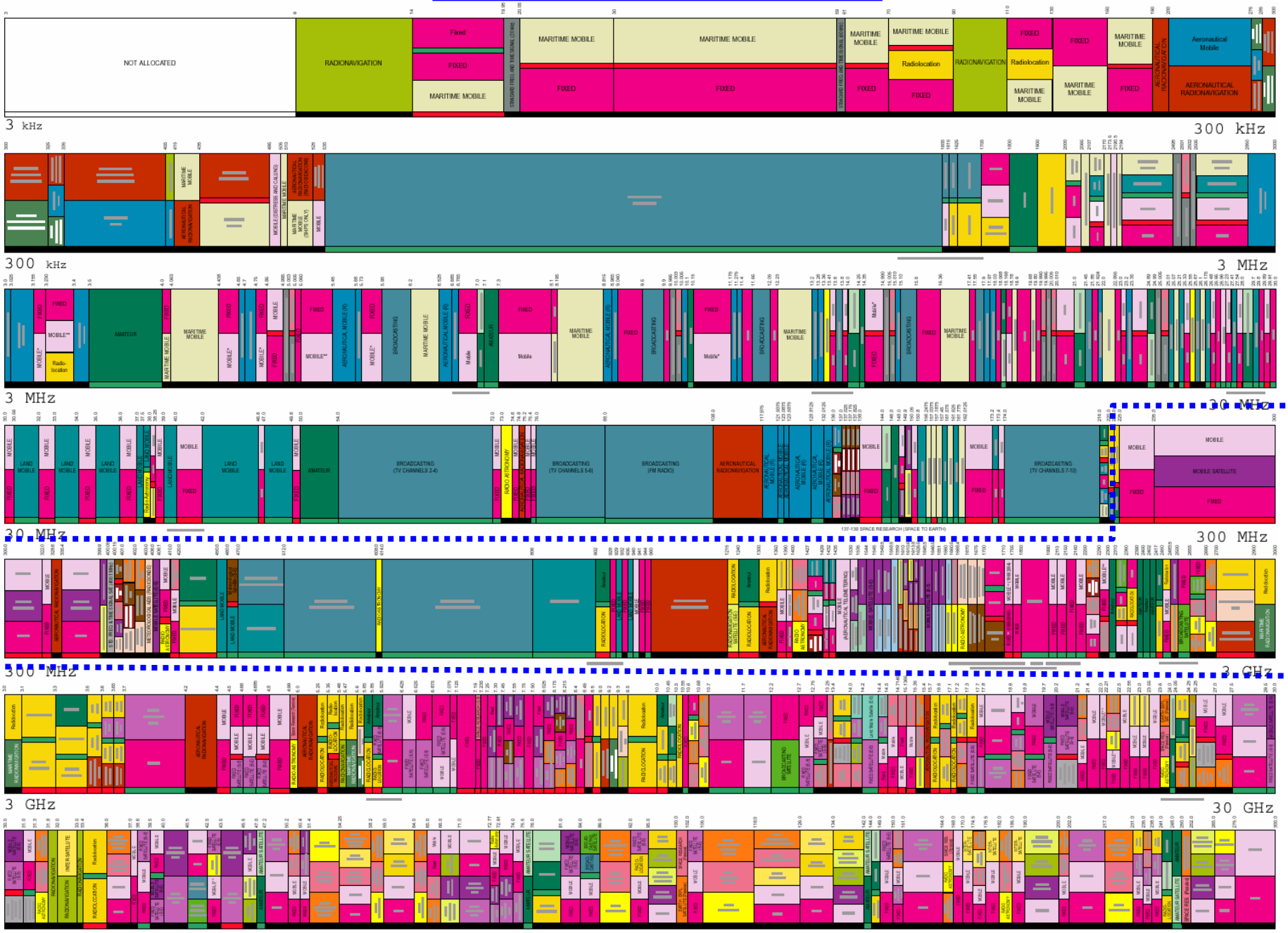
Management of the Frequency Spectrum

- THE GROWING CHALLENGE (TECHNICAL)
- THE LEGACY
- THE ORGANIZATIONAL CHALLENGE
  - Absence of National Spectrum Strategy
  - Absence of central perspective or authority
    - divided authority
  - International Spectrum Management
- PRESENT ARRANGEMENTS AND LIMITATIONS
  - International
  - Executive Branch
  - Pressures from the Hill and from Industry
- REMEDIES
  - Need for National Spectrum Strategy
    - and organize to achieve it
  - Executive Branch Collaboration
  - International
  - Need to Recognize Special Status of Critical Spectrum and its Protection

Physics Constraints on Spectrum Exploitation



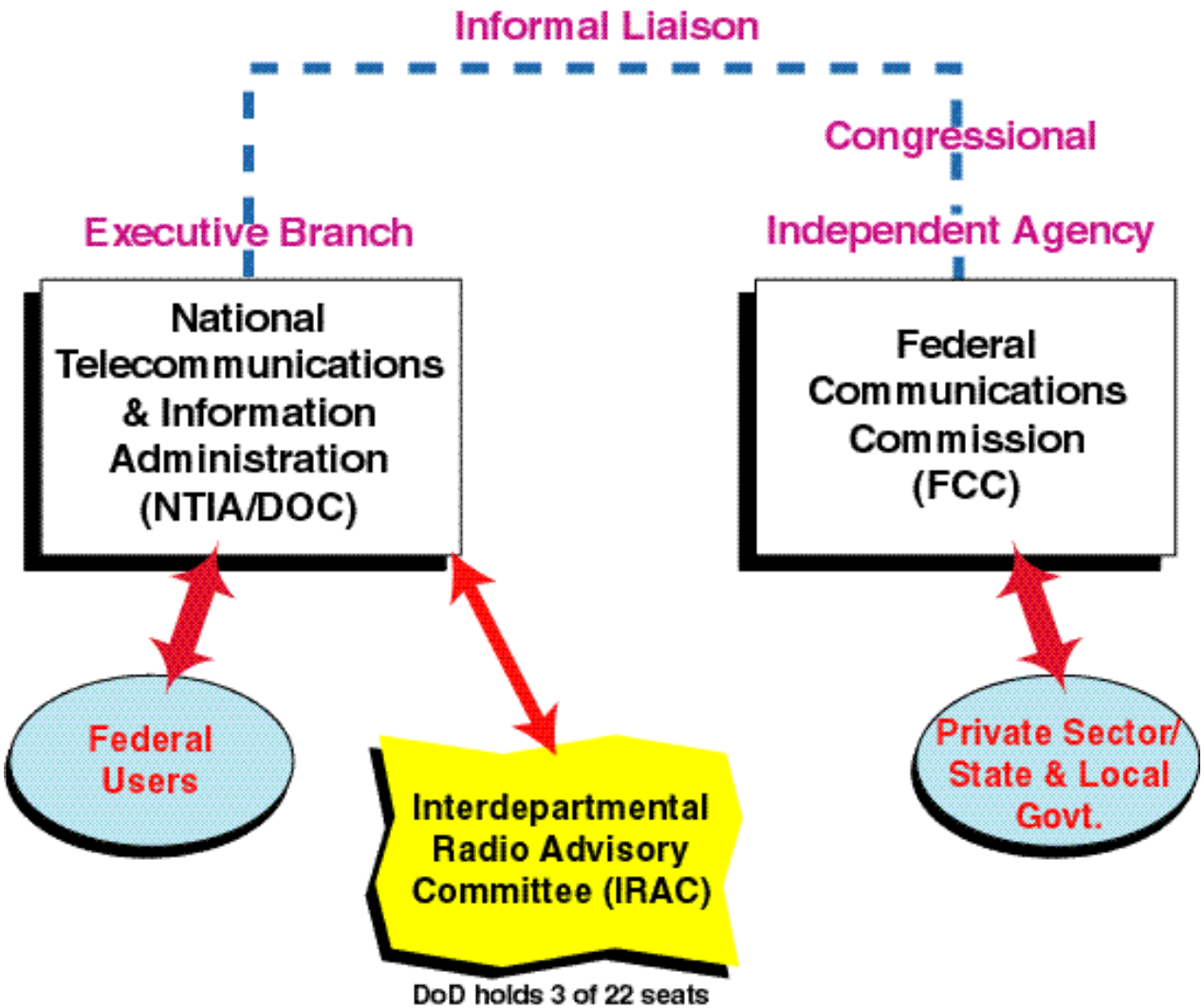
U.S. Frequency Allocations



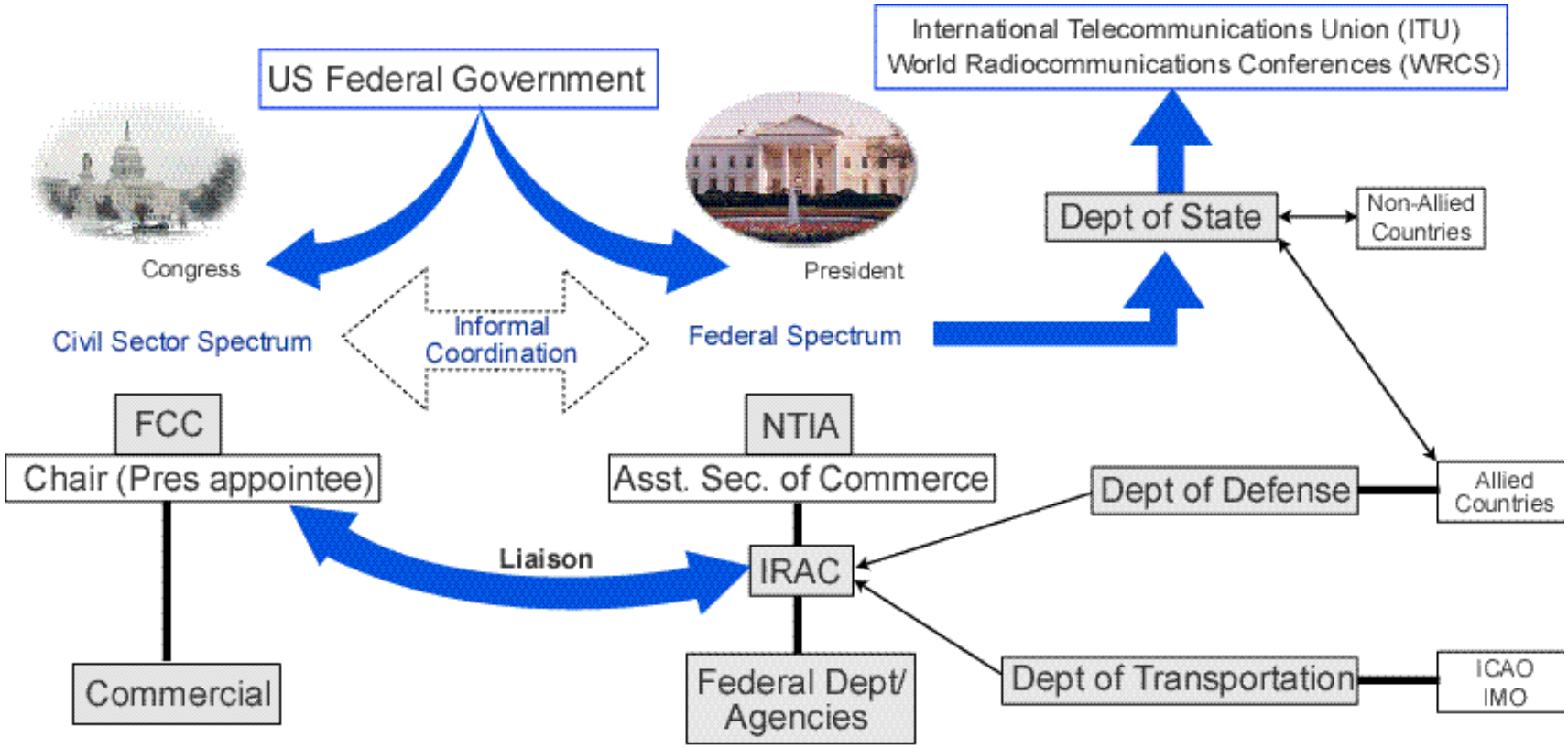
Excerpt from DSB Report

- “The United States is unique in the world in that it lacks a mechanism to formulate a national spectrum policy that balances traditional national security and new commercial uses of frequency spectrum.”

U.S. Government Spectrum Management Structure



Spectrum Management



FCC: Federal Communications Commission

NTIA: National Telecommunications and Information Administration

IRAC: Interdepartmental Radio Advisory Committee

The International Challenge

- The division of USG responsibilities and leadership among State, NTIA, and FCC has precluded a long term national strategy
  - U.S., though exceptionally dependent on spectrum access, rare among industrial nations in not formulating a national strategy
- State Department represents U.S. at International meetings
  - But U.S. representation at International Telecommunications Union described as “haphazard”
  - Spectrum work “too technical” - until a crisis
  - Each World Radiocommunications Conference considered a “pick up game for State Department”, yet requires continuous work
  - Requires full time, not part time, ambassador
- U.S. has only a single vote
  - Not part of biggest voting bloc
    - But little effort given to organizing

Excerpts from Ambassador Schoettler's Report

- "Europe is probably the most organized region. The Conference of European Posts and Telecommunications (CEPT) includes 43 countries. Once CEPT has adopted a stance, it tries to hold all 43 countries to that position, sometimes with difficulty."
- "The Europeans assign responsibilities for developing positions on each issue to different countries in CEPT. These positions are called European Common Proposals (ECP)."
- "It is interesting that our allies are often our opponents at ITU conferences. This is primarily because of our commercial competitiveness. On the other hand, our traditional opponents are often our allies. For example, we have many conflicts with Europe and Canada, but often find ourselves in agreement with countries like Russia and the former Soviet republics, Syria and even China."

National Security

- U.S. Military strategy depends on "Information Dominance"
  - RF spectrum access essential for military operations
  - Military spectrum requirements are growing rapidly
    - Increasingly difficult for DoD to meet its domestic and international needs
- Spectrum-based information infrastructure lies at the core of 21st Century military superiority
- RF spectrum limitations must not limit U.S. Military capabilities

Safety of Life

- There is a tradeoff between spectrum exploitation and safety
- Safety of Life depends on meeting extremely tight requirements for navigation systems accuracy, availability and intelligibility
- While some systems can tolerate modest levels of interference (and hence can maximally exploit spectrum), Safety of Life Systems Cannot
- Safety of Life systems sometimes must function using very weak signals that require extraordinary protection

Commerce/NTIA

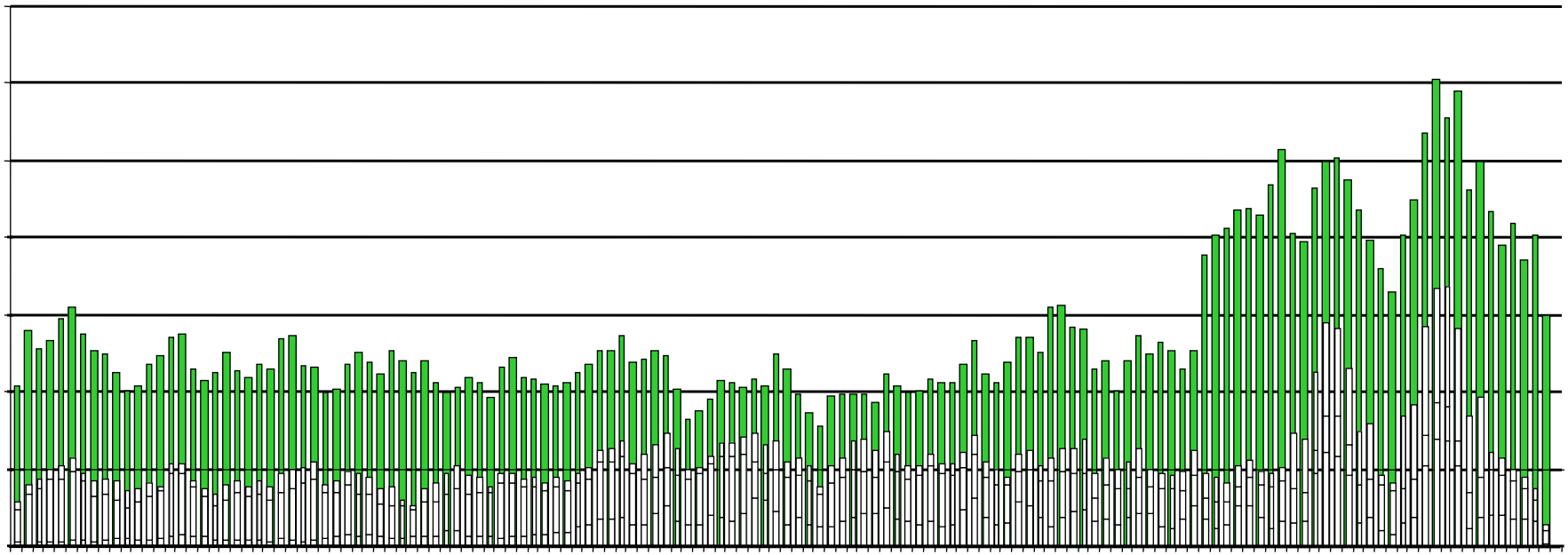
- NTIA's Mission (2000 Strategic Plan)
  - NTIA's mission is to promote the efficient and effective use of telecommunications and information resources in a manner that creates job opportunities, enhances U.S. competitiveness, and raises the standard of living
- How does this differ from FCC's mission?
- What is missing here?

Protection of Government Spectrum for

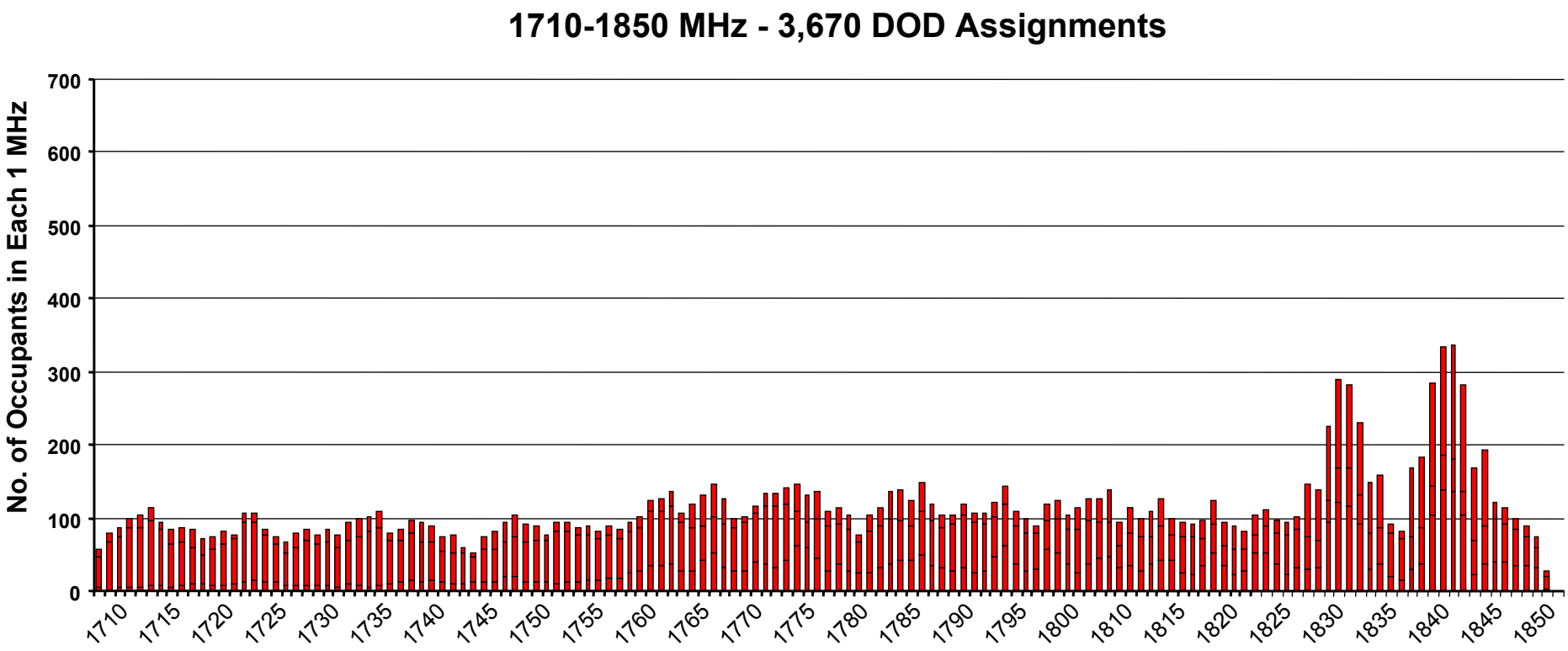
National Security and Safety of Life

All

1710-1850 MHz - 8,477 Federal Gov. Assignments



DOD Use of the 1710-1850 MHz Band



Excerpts from GAO Report on Defense Spectrum Management, Dated August 2001

- "If the current schedule to auction spectrum is maintained, the federal government will make decisions affecting national security without knowing the full extent of the risks it faces or steps available to reduce those risks."
- "Without the proper technical and operational analyses, DOD risks a reduction in military preparedness or a degradation of systems in the 1755 to 1850 MHz band that support mission capabilities. Specifically, DOD faces an unknown risk of operational degradation to its satellite operations that could include actual loss of control of its satellites and an undetermined risk to the warfighter."

Excerpts from GAO Report on Defense Spectrum Management, Dated August 2001

- "Some representatives of the commercial mobile radio service industry claim additional spectrum is needed to support advanced communications systems… Other members of the industry question the need for, or feasibility of providing, large amounts of additional spectrum to meet industry requirements."

Remedies

- Need for National Spectrum Strategy
  - and Organize to Achieve it
- Executive Branch Collaboration
- Need to Recognize Special Status of Critical Spectrum and its Protection
- International